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AUTHOR Randall, Janet H.
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ABSTRACT

A line of reasoning used in recent research on language acquisition assumes that a child acquiring the language has only two reliable sources of information available about the target grammar: a set of grammatical principles and the primary data of the language spoken around him. A third kind of evidence, negative evidence, would be helpful but is unavailable. However, with its current set of assumptions, this logic of language acquisition is not easily applicable to any problems involving overgeneralization in child language. Another kind of evidence, indirect positive evidence, is the combination of a principle stated in the form of a negative conditional or its equivalent, a disjunction, and data that allow such a principle to operate. This kind of evidence allows learners a way out of overgeneralizations, and is an indication of how positive evidence and principles of grammar can be turned around to substitute for the negative evidence that seemed to be the only answer to the problem of overgeneralization. (Author/MSE)

Indirect Positive Evidence: a new route for retreat

Janet H. Randall, Northeastern University

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Recent work in language acquisition has been advancing under the influence of a new set of assumptions -- a line of reasoning that's been called the "logic of language acquisition". It's outlined in (1) on the handout.

(1) a. grammatical principles
    b. primary data
    c. no negative evidence

The basic idea is that the paths that are open to a child acquiring the language are actually fewer than we had thought. The child has really only two reliable sources of information available about the target grammar. The first is (1a), a set of grammatical principles. Although at this point we're only beginning to understand which particular principles learners might come equipped with, and how they should be stated, there is general agreement that certain principles are either given in Universal Grammar or are established early on, as parameters for the language being acquired are set.

The other source of information is (1b), the primary data of the language spoken around the learner.

There is a third kind of information which would be very helpful but is unavailable. This is negative evidence, evidence that certain strings are ungrammatical in a particular language. What this means is that a learner could hear a subset of the primary data, and incorrectly advance a general

rule on the basis of these cases, and she would have no way of finding out if the rule is too general. She could blithely go along, applying the rule in cases where it shouldn't apply, and no piece of evidence would tell her that she has overgeneralized. It is difficult to see, from the logic of (1), how she could ever "retreat".

Because of this, we researchers in language acquisition are forced to propose only certain kinds of models about how language works. We can no longer entertain any models which rely on negative evidence to tell learners to limit overgeneral rules. Instead we must construct explanations within the confines of (1a and b) alone.

Most of you are familiar with this line of reasoning through work of Lee Baker (1979) on so called "rules with lexical exceptions. The classic case, which he discussed, is the English dative. Baker reasoned about the dative as follows.

There are a number of verbs which participate in the English dative alternation. Some of these are given in (2).

(2) a. Romeo gave some posies to Juliet.
Troilus sent a message to Cressida.
Pablo showed the painting to Doris.

b. Romeo gave Juliet some posies.
Troilus sent Cressida a message.
Pablo showed Doris the painting.

On the basis of this apparent regularity, it is reasonable that a learner would generalize a rule like (3):

(3) V NP_1 to NP_2 → V NP_2 NP_1

But the rule, of course, is too general. It would allow the learner to create ungrammatical sentences like (4b) on the basis of examples in the primary data (4a):

(4) a. Romeo delivered some posies to Juliet.
Troilus transmitted a message to Cressida.
Antony constructed a barge for Cleopatra.

b. *Romeo delivered Juliet some posies.
*Troilus transmitted Cressida a message.
*Antony constructed Cleopatra a barge.

Now, learners do manage to grow up to have the right grammaticality judgements about the verbs in (4), and they don't accept sentences like (4b), as adults. But Baker asks: if they are using a general rule like (3), and they have no access to negative evidence, how do they learn where the rule may not apply?

He then makes the claim that in learning these sorts of cases-- cases of rules with "lexical exceptions" -- children must actually not be using a rule at all. We could account for how they master the facts of (2) and (4) if we assume that they

learn, for each verb, the possible structures that it can appear in. And they have access to this data in the positive utterances that they hear. They will hear (2a and b) and (4a), but they will never hear cases like (4b). So if they built a grammar based entirely on hearing verbs in particular subcategorization frames, the overgencralization problem would be solved. It would never arise.

This solution is quite elegant. But there's a problem with it, which is that it predicts that cases like (5) should never occur:

(5) *David suggested Ruth the trip.

*Sue explained Jane the problem.

*Bob reported the police the accident.

But these cases have been attested in children's speech, as reported in a recent paper by Mazurkewich and White, in Cognition (1984). For the children who uttered these sentences, at least, there is a problem. They must retreat from their overgeneralizations, without the help of negative evidence.

We seem now to be at a stalemate. There is a general problem with the logic of language acquisition sketched in (1), which is that it is not easily applicable to any problems involving overgeneralization in child language, at least under the current set of assumptions.

But I want to examine these assumptions more closely.

According to the logic in (1), the learner has available (1a), a set of grammatical principles. An example might be, the principle that allows her to make up generalizations like (3). There are no doubt other principles that say what form a rule must take, and so forth. Second, there's (1b), the primary data. The learner hears these and treats them as samples of the allowable constructions of the language, which she can add directly, to expand on the words or constructions that she already knows. Let me give a name to this way of handling the primary data -- used in this way, the primary data acts as "Direct Positive Evidence".

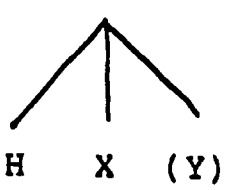
But there's another way that for the primary data to be used. It can actually provide evidence that forms should be subtracted from the grammar. And I will refer to the primary data when it's used in this way as Indirect Positive Evidence. This label will be clear in just a few minutes. First let me give an example to show what I mean, by returning to the problem which we left unsolved -- the dative problem.

OK. Let's assume that for children learning languages like English, with an X-bar type of syntax, that one of the grammatical principles available to them is roughly of the form in (6):

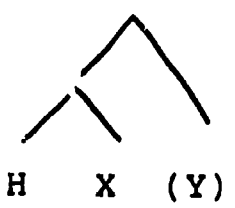
(6) The Order Principle: Within a maximal projection optional complements are attached outside of obligatory complements, in the unmarked case.

"Outside of" is with reference to the head of a phrase. So in cases where the head is on the left, the possibilities are (7a) and (b)

(7) a.

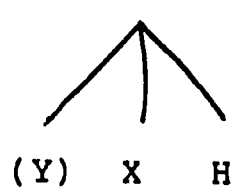


b.

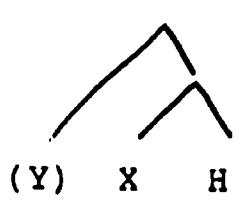


Where the head is on the right, (7c) and (d):

c.



d.



In all of the examples, the optional complement Y is attached "outside" of the obligatory complements, X.

For Verb Phrases in English, which subcategorize for complements to the right of the head, (7a) holds. In other words, the Order Principle allows VPs with their complements in the order shown in (8a) but not (8b).

(8) a. V X (Y)

b. V (X) Y

An example is the case of a verb which takes an obligatory direct object but an optional prepositional phrase, like those

verbs in (9). The objects must appear before the PP; if the PP is first, the sentences are ungrammatical:

(9) *Pablo invited (to the opening) Doris.
*Juliet got (from Romeo) directions.
*Alice collected (from her travels) those recipes.

Reversed, of course, they are perfect. There is, of course, one context in which the Order Principle can be violated, and tnat's when the obligatory constituent is much heavier than the optional one. So cases like (10), which has a heavy NP, must have the heavy constituent on the outside even thougn it's the obligatory one:

(10) Pablo invited to the opening all the prospective buyers hecould find.

But basically, the Order Principle holds for the usual cases in English.

Now let's turn to the data that are available for datives. (11) contains a typical paradigm. (a-c) occur in the primary data,

(11) a. Romeo gave some posies to Juliet.
b. Romeo gave Juliet some posies.
c. Romeo delivered some posies to Juliet.

and recall that the learner also produces (d):

d. *Romeo delivered Juliet some posies.

The learner's subcategorizations. then, look essentially like (12) for these two classes of verbs:

(12) a. give NP PP
give NP NP

b. deliver NP PP
deliver NP NP

Now, there is one more piece of relevant data which the learner will encounter. It comes from the primary data. Verbs of the deliver class appear in the language with single NP objects, as in (13b).

(13) b. Romeo delivered the posies.

Verbs of the give class, though, do not appear in this structure. (13a):

(13) b. *Romeo gave the posies.

is out. (We do find exceptions to this, but they are highly marked. One type of exception is idioms, as in to give blood, where the choice of words is very limited; and the second type is in cases where the second object is "understood" from context, as in John gave a dollar. We know to whom. In

general, though, the cases of (14a) are considerably worse-sounding than the cases of (14b):

(14) a. *give NP

*Romeo gave some posies.

*Troilus sent a message.

*Agamemnon told the news.

*Pablo showed the painting. (under the normal reading of show.)

b. deliver NP

Romeo delivered some posies.

Troilus transmitted a message.

Agamemnon reported the news.

Pablo explained the painting.)

This difference, that is, that verbs of the deliver but not the give class occur with a single NP will provide the necessary Indirect Positive Evidence, and trigger retreat. But how?

Recall that the learner has constructed the grammar in (12). Now she encounters the data of (14b). To incorporate these cases, she parenthesizes the optional phrases, and her revised grammar now looks like (15):

(15) a. give NP PP
give NP NP

b. deliver NP (PP)
deliver (NP) NP

But in the second deliver entry, an optional complement is preceding an obligatory complement, which is exactly the structure prohibited by the Order Principle. So this entry has to be deleted from the grammar, and what remains is (16):

(16) a. give NP PP
give NP NP

b. deliver NP (PP)

The result is that she retreats to just the cases allowed in adult grammar.

Notice, that since the learner will not hear give NP alone, the Order Principle will never be violated for give verbs, and retreat won't occur where it shouldn't.

But what happens if a learner does hear one of the marked examples of a give-class verb with a single NP, say, in the idiom to give blood, and at this point, she has not realized that it's an idiom. Here, just as with the deliver cases, she'll subtract the double object form from the grammar. But this sort of mistake is not a problem at all, since she will always be able to put the grammatical forms back in. Sentences like Give John a cookie will keep recurring, and she will be able to add them Directly. The equivalent of this kind of Direct Positive Evidence will not recur for deliver cases, of course, so these won't be reinstated.

The Indirect Positive Evidence, then, are the data of (14b), and not the data themselves, but crucially, how they're used. Using them directly, all the learner can do is add something to certain subcategorizations -- in this case, a pair

of parentheses. But combining them with a principle of grammar of the form of (6) -- a negative conditional (or equivalently, a disjunction) which says essentially "if something is optional, then it can't appear in a certain configuration" --this allows her -- in fact, forces her -- to retreat.

Indirect Positive Evidence, then, is the combination of a principle which is stated in the form of a negative conditional (or its equivalent, a disjunction) and data which allow such a principle to operate. So far, we have seen how this kind of evidence allows learners a way out of dative overgeneralizations. But the important result here, is not about datives. It's really about how positive evidence and principles of grammar can be turned on their heads, to substitute for the negative evidence which seemed to be the only answer to the problem of overgeneralizations.

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